

Name: Muhammad Sulaiman

IP # 7925

Section: A

Instructor: Engr. Ashraf Ali

Subject: Introduction to Computer Programming

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: Summet

Q.10

(A)

Design an algorithm and draw a flowchart that will read the ^{two} sides of a rectangle and calculate its area?

Sol:

Answer:

=> Pseudo Pseudo Code:

-> Input the width (W) and Length (L) of a rectangle,

-> Calculate the area (A) by multiplying L with W

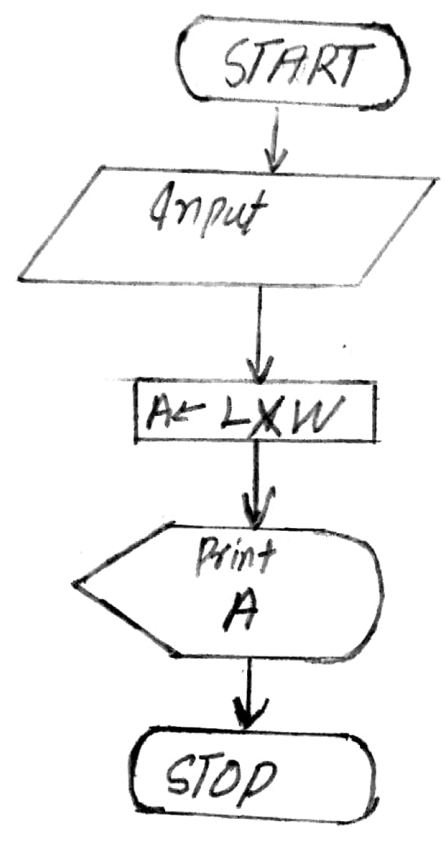
-> Print A

=> Algorithm;

Step 1: Input W, L,

Step 2; $A \leftarrow L \times W$

Step 3: Print A



Q#1

b) Name ~~and~~ different types of errors which can occur during the execution of Program:

Answer

There are three kinds of Error

- 1) Syntax errors
- 2) runtime errors
- 3) Logic errors
- 4) ~~Compilation~~ ^{Compilation} errors
- 5) system error

1) Syntax error: Syntax error can be detected at compile time in most language if not fixed the program simply crash at run or compile time

2) Logic error: A logic error or bug is when your program compiles and run, but does

the wrong thing. The Java⁴ system of course has no idea what your program is ~~supposed~~ supposed to do. So it provides no additional information to help you find error. Error such as calculation mistake etc.

3) Run time errors:

These error occurs while the program is running. If there is a syntax error, Java may ~~detect~~ ~~detected~~ detect an error while program is running. You will get an error and a stack trace that tell not only where the error occurred but also what the other method

4) System errors will simply crash your program or freeze it.

5) ^{Compiler} ~~Compilation~~ Errors :-

Some programming languages require a compilation step - compilation is where your high-level language converts the computer can understand better. A compilation or compile-time error happens when the compiler does not know how to turn your code into the lower-level code.



Q:2a)

Why we use `iostream.h` and `conio.h` in C++ Programming

Answer

`iostream.h`.

This is the name of library definition file for all Input Output stream. Your program will almost certainly want to send stuff to the screen and read things from the keyboard.

-> `iostream.h` is the name of file in which has code to do it that work for you.

conio.h ::

conio.h is the header file used to include some function like `clrscr()`, `getch()` etc.

You can include these function by simply

`#include <conio.h>` where conio stand for console input output.

In the C programming language conio.h is used for include some predefined function ~~when~~ which are already defined in C library

So we can directly used ~~often~~ them

As conio.h we also often use a header file known as ~~studio~~ `stdio.h` for standard input output.

Q42 Part (b)

(8)

What do you understand by the term "maintain and update the program"?

Answer: **Maintain and update the Program:**

- ~~maintenace~~
maintenance and update are the modification of a software product after delivery to correct faults. to improve performance or other attribute or to adopt the product to a modified environment.

Types of Maintenance:

a) **Corrective maintenance:**

- Reactive modification of a software product performed after delivery to correct discovered problem

Problem - It deals with fixing bugs in the code

b) ~~Preventive maintenance:~~

b) **ad aptive maintenance:**

Modification of a software product performed after delivery to keep a software product usable in a change or changing environment.

It deals with adapting the software to new environments.

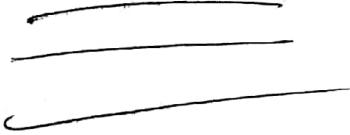
c) **Per fective maintenance:**

Modification of software product after delivery to improve performance or maintain bility. It deal with updating the software according to changes in

Pre-user requirement

(B) Preventive maintenance:

Modification of a software product after delivery to detect and correct latent faults in the software product before they become effective faults. It deals with updating effective documentation and making the software more maintainable.



Q#3: Differentiate b/w the following
 a. Bug and Debug
 b) Syntax error, and Logical Error.

Answer: part b

Syntax error	Logical error
<p>1) Error occurred due to not following the proper grammar/syntax of the language</p> <p>OR</p> <p>Error occurred due to violating rules of the programming language.</p> <p>Example: in C++ each statement must end with a semicolon (;)</p> <p>2 → A syntax error occurs due to fault in the program syntax</p>	<p>Error occurred due to incorrect logic applied by the programmer</p> <p>Example: failure to include calculation of overtime hours in a payroll program in a logic error.</p> <p>Example:</p> <p>→ A logical error occurs due to a fault in the algorithm.</p>

In compiled language the compiler indicates the syntax error with the location and what the error is.

→ it is easier to identify a syntax error

The programmer has to detect the error by himself.

→ it is comparatively difficult to identify logical error

Part c: Low level language

- 1) Understand
 - 2) Ease of writing
 - 3) Running speed
 - 4) Writing format
- 1) Mnemonic, binary, hexadecimal

Model small C

.58h
.dat

High level language

simple English and mathematics symbols

Add two numbers and stores the result

```
int main ( )
```

```
{  
  "assign" to the
```

Low level

```
mov eax, 5
```

```
mov ebx, 10
```

```
add eax, ebx
```

```
end
```

low High level 13

variable result value

```
0 of 5 + 10 int
```

```
int result = 5 + 10
```

```
return 0;
```

```
}
```

Ease of writing

→ Designed for the ease of the computer running the language.

→ Difficult for user to read and write

→ Designed for the ease of the person writing the language

→ Using language that user can understand english.

Running speed

1) faster

2) No need to compile

3) more efficient

→ These language are normally used to write hardware program

1) Need compiler or interpreter

2) Translate into machine code.

3) Lower speed execution.

→ These language are normally used to write application programs

Q#3 part (L)

Compiler and Assembler

Compiler

- 1) Software that converts programs written in a high level language into machine level language
- 2) Convert the whole high level language program to machine language at a time
- 3) Used by C++
- 4) compiler translate high level language programming language code to machine level code.
- 5) compiler checks and converts the complete code at one time

Assembler

- 1) Software that converts programs written in assembly language into machine language
- 2) Convert assembly language program to machine language
- 3) Used by assembly language.
- 4) Assembler converts the assembly level language to machine level code.
- 5) Assembler generally does not convert complete code at one time.

Q#3 part d)

System Software	Application Software
<p>1) System software is the type of software which is interface b/w application software and system</p>	<p>Application Software is the type of software which run as per user request it runs on the platform which is provide by system software</p>
<p>2) In general system software developed in low level language which is more compatible with the system hardware in order to interact with.</p>	<p>while in case of Application software high level language is used for their development as they are developed as some specific purpose software</p>
<p>3) System software are installed on the computer when operating system is installed</p>	<p>3) On other hand in application software user can interact with it as user installed according to the user requirement.</p>

4) System software can run independently it provides platform for running application software

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An application software can't run independently. They can't run without the presence of system software

5) As mentioned in above points system software are specific to system hardware so less or no user interaction available in case of system software.

On other hand in application software user can interact with it as user interface is available in this case.

6) Some examples of system software are compiler, assembler, ~~dev~~ debugger, drivers etc.

6) Some examples of application software are word processor, web browser, media player, etc

7) System software is used for operating the computer hardware

7) Application software is used for by user to perform specific task.

Q#3 Bug and Debug?

Answer:

Bugs are errors in code of your program that make your program function improperly.

-> Fixing bugs is called Debugging. Debugging is generally of feature in ~~my~~ major IDEs like Visual Studio, Net Beans, Clion Pycharm et

-> Bugs are usually seen in video games and development apps and beta version of these apps. developers debug their app and games and make sure that the bug doesn't exist. you can use either debug using IDE, or do it traditionally by reading

The code your self and
fixing it.

Although Although the IDEs option
in much easier.

But either way, Debugging

can be difficult for newbies.